VT-M2M-Ruban
User's Manual

Embedded

Vantron Technology, Ltd

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Revision History:

No.	Version	Description	Date
1	V1.0	First release	Oct.10, 2014
1	V1.1	Update the default DDR memory to 512MB for Moon Island usage	Feb 3, 2015
2	V1.2	1:Update the order code 2:Add the Ethernet interface describe	Feb.04.2015

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1 Foreword

1.1 Copyright Notice

While all information contained herein have been carefully checked to assure its accuracy in technical details and printing, Vantron assumes no responsibility resulting from any error or features of this manual, or from improper uses of this manual or the software. Please contact our technical department for relevant operation solutions if there is any problem that cannot be solved according to this manual.

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1.2 Notes

Applicable notes are listed in the following table:

Sign	Notice Type	Description
	Notice	Important information and regulations
	Caution	Caution for latent damage to system or harm to personnel

1.3 Statement

It is recommended to read and comply with this manual before operating VT-M2M-Ruban which provides important guidance and helps decreasing the danger of injury, electric shock, fire, or any damage to the device.

1.4 Disclaimer

Vantron assumes no legal liability of accidents resulting from failure of conforming to the safety instructions.

1.5 Limitation of Liability/Non-warranty

For direct or indirect damage to this device or other devices of Vantron caused by failure of conforming to this manual or the safety instructions on device label, Vantron assumes neither warranty nor legal liability even if the device is still under warranty.

1.6 Safety Instructions

- ✧ Keep and comply with all operation instructions, warnings, and information.
- ✧ Pay attention to warnings on this device.
- ✧ Read the following precautions so as to decrease the danger of injury, electric shock, fire, or any damage to the device.

1.7 Precautions

- ✧ Pay attention to the product labels/safety instructions printed on silk screens.
- ✧ Do not try repairing this product unless declared in this manual.
- ✧ Keep away from heat source, such as heater, heat dissipater, or engine casing.
- ✧ Do not insert other items into the slot (if any) of this device.
  • Keep the ventilation slot ventilated for cooling.
  •System fault may arise if other items are inserted into this device.
- ✧ Installation: ensure correct installation according to instructions from the manufacturer with recommended installation tools.
- ✧ Ensure ventilation and smoothness according to relevant ventilation standard.

1.8 Safety Instructions for Power Cables and Accessories

Proper power source only

Start only with power source that satisfies voltage label and the voltage necessary according to this manual. Please contact technical support personnel of Vantron for any uncertainty about the requirements of necessary power source.

Use tested power source

This product still contains a button lithium battery as a real-time clock after its external power source is removed and therefore should not be short-circuited during transportation or placed under high temperature.

Place cables properly:

Do not place cables at any place with extrusion danger.

Cleaning Instructions

- Please power off before cleaning the device.
- Do not use spray detergent.
- Clean with a damp cloth.
- Do not try cleaning exposed electronic components unless with a dust collector.
- Support for special fault: Power off and contact technical support personnel of Vantron in case of the following faults:
  - The device is damaged.
  - The temperature is excessively high.
  - Fault is still not solved after the operation according to the manual.

2 Overview

2.1 Introduction

Thank you for choosing Vantron. It is our commitment to provide our valued customers with the embedded devices equipped with the state-of-the-art technology and the best product services.

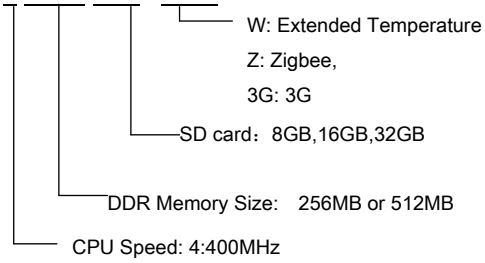
Vantron's M2M products are based on the most advanced ARM and Intel Atom processors and have low-power consumption and high integration. The products are designed for applications of M2M in industrials, medicals, financial, retail, vehicle, and transportations etc.

2.2 Product Series

2.2.1 Product Order Coding Rule

Order Code

VT-M2M-Ruban-4-256M-8GF-3GZW



2.2.2 Ordering Information

Order Examples:

VT-M2M-Ruban-4-256M-8GF	Quark Processor, 400MHz CPU, 256MB DDR3, 8G Flash,GPRS
VT-M2M-Ruban-4-256M-16GF-3GW	Quark Processor, 400MHz CPU, 256MB DDR3, 16G Flash,GPRS, 3G
VT-M2M-Ruban-4-512M-8GF-3GZW	Quark Processor, 400MHz CPU, 512MB DDR3, 8G Flash,GPRS, 3G,ZigBee

Accessories:

Install Mechanical tools,1pc
Power Adapter with locked connector (Optional),1pc
Power Terminal (1x3x5.08mm),1pc
3G Antenna(Optional),1pc
WiFi Antenna(Optional),1pc
Zigbee Antenna(Optional),1pc
GPRS Antenna,1pc

3 M2M-Ruban Hardware Instructions

3.1 Product Appearance

Front Side View

Back Side View

View for all optional embedded modules and antennas

Bottom View for optional embedded modules

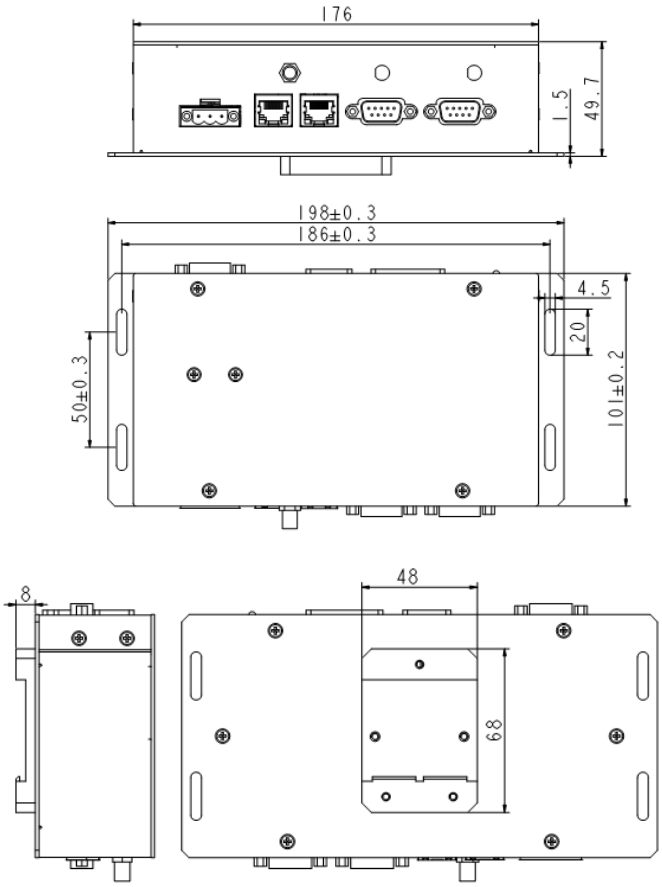
3.2 Specifications

Specifications		
CPU	Processor	Intel® ATOM ™ , Quark SoC,A0,X1021, 400Mhz
Memory	On Board RAM	DDR3 800MT/s 512MB Optional 256MB /1GB Down Memory

	ROM Internal	On board 64Mb SPI flash 1xMicroSD card external storage
Wireless Communication	WLAN	Optional 802.11 b/g/n Wireless Module, external antenna
	3G Module	Optional1x PCIe 3G Broad Band Module with SIM slot
	ZigBee	Optional low power Zigbee Module, external antenna
	GPRS	GPRS module, external antenna
Peripheral Interfaces	Ethernet	2x10/100-BaseT(RJ45)
	USB	1xUSB2.0 Host (Type A)
	COM Port	2xRS232 or RS485 DB9-Male External
	SD card	1x Micro SD card Slot
	RTC	Supported
	Control	Reset Button
	Restore	Recovery Button
Software	OS	Linux
	Applications	SDK Available
Power	Input	DC24V(9-36V), 1x3x5.08MM
	Consumption	6W (Pulse8W) Sleep 1W. (without 3G,GPRS,Zigbee,WLAN)
Mechanical	Dimensions	138x102x52mm (Box)
	Install Brackets	160x102x52mm
	Weight	0.6Kg (1.2KKg package Kit)
	Enclosure	Aluminum Alloy with Black Color

Environment Condition	Temperature	Operating:-0°C ~ +60°C (ETR:-40°C ~ +80°C Optional)
		Storage: -20°C ~ +70°C, (ETR:-40°C ~ +85°C Optional)
	Humidity	5-95%RH at 25-35 (Non-Condensation)
	Cooling Mode	Fan less, Heat Sink
	Approvals	UL, FCC Class B, and CE

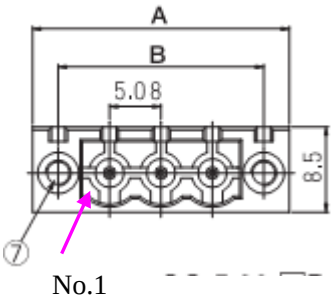
3.3 Dimension



3.4 Interface Description

3.4.1 Wide-Range Power Interface

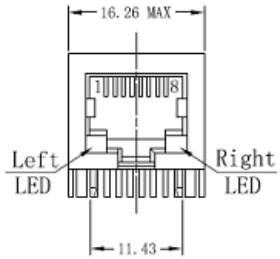
Power JACK 1x3x5.08MM



Pin	Description
1	DGND (ground pin)
2	Power (+6 to +36V)
3	Chassis GND

3.4.2 Ethernet Interface

Standard RJ45 interface, supporting 10M/100M self-adaptation, this is a standard RJ45 ethernet port



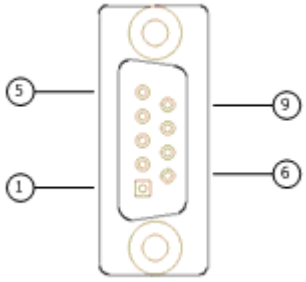
Pin	Description	Remarks
1	TDP	IO
2	TDN	IO
3	RDP	IO
4	NC	
5	NC	
6	RDN	IO
7	NC	
8	NC	

NOTE: Green LED of RJ45 is the LED_LINK pin, in Mode 2(Default mode) will be ON to indicate Link is good and BLINK to indicate activity is present on either transmit or receive activity

Yellow LED of RJ45 is the LED_ACT/COL pin, In Mode 2(Default mode), this pin indicates the Collision status of the port. The LED will be ON for Collision and OFF for No Collision.

3.4.3 D Sub-9 RS232 Connector

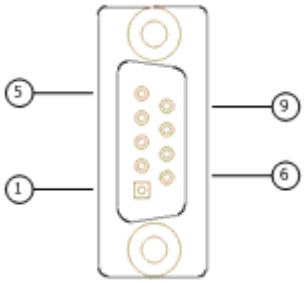
Standard vertical 2x DB-9 male connector



Pin	Description	Remarks
1	DCD1/485_A	Jumper set
2	RXD1/485_B	Jumper set
3	TXD1	
4	DTR1	
5	DGND (ground pin)	
6	DSR1	
7	RTS1	
8	CTS1	
9	NC	

3.4.4 D Sub-9 RS232 Connector

Standard vertical 1x DB-9 male connector for debug



Pin	Description	Remarks
1	NC	
2	RXD1_D	INPUT
3	TXD1_D	OUTPUT
4	NC	
5	NC	
6	DGND	Ground
7	NC	
8	NC	
9	NC	

3.4.5 LED

PWR LED: light system power OK(main power up);off system power turn off

Status LED:Blink SATA HDD active.

3.4.6 USB Host Connector

Dual vertical USB A type interface, USB2.0

Pin	Description
A1	USB1_VCC(+5VDC)
A2	USB1_D-
A3	USB1_D+
A4	USB1_DGND(ground pin)

3.5 Operation Notice

3.5.1 Change SIM Card

Push the small button on the left of SIM Card Holder, and install the SIM card to the holder. Then push the holder into the Slot.

3.5.2 Power Supply

Please make sure using adapter in the accessory, or the power is not reversed when powered by other adapter.

4 Tips

Waste Disposal

It is recommended to disassemble the device before abandoning it in conformity with local regulations. Please ensure that the abandoned batteries are disposed according to local regulations on waste disposal. Do not throw batteries into fire (explosive) or put in common waste canister. Products or product packages with the sign of “explosive” should not be disposed like household waste but delivered to specialized electrical & electronic waste recycling/disposal center. Proper disposal of this sort of waste helps avoiding harm and adverse effect upon surroundings and people’s health. Please contact local organizations or recycling/disposal center for more recycling/disposal methods of related products.

Comply with the following safety tips:

Do not use in combustible and explosive environment

Keep away from combustible and explosive environment for fear of danger.

Keep away from all energized circuits.

Operators should not remove enclosure from the device. Only the group or person with factory certification is permitted to open the enclosure to adjust and replace the structure and components of the device. Do not change components unless the power cord is removed. In some cases, the device may still have residual voltage even if the power cord is removed. Therefore, it is a must to remove and fully discharge the device before contact so as to avoid injury.

Unauthorized changes to this product or its components are prohibited.

In the aim of avoiding accidents as far as possible, it is not allowed to replace the system or change components unless with permission and certification. Please contact the technical department of Vantron or local branches for help.

Pay attention to caution signs.

Caution signs in this manual remind of possible danger. Please comply with relevant safety tips below each sign. Meanwhile, you should strictly conform to all safety tips for operation environment.

Notice

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FCC Warning

This device complies with FCC class B Rules. Operation is subject to the Following conditions.

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Consult the dealer or an experienced radio/TV technician for help.

Any modification to the product is not permitted unless authorized by Vantron. It's not allowed to disassemble the product, it is not allowed to replace the system or change components unless with permission and certification. Please contact the technical support department of Vantron or local branches for help.

IC statement

Disclaimer:

Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

RF exposure warning

This equipment must be installed and operated in accordance with provide instructions and the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operation in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

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